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The Impact of Tonsillectomy on Covid 19 Infection

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Abstract

Tonsils play role in human beings' immune system; however, many patients develop recurrent tonsilitis and tonsillectomy could be the best treatment option for them. In fact, tonsillectomy is one of the commonest surgeries performed worldwide. People in general believe that such a procedure could make them more susceptible to infection. For that reason, searching the effect of tonsillectomy on getting infection with SARS COV- 2 during the pandemic becomes important. This study evaluated the effect of tonsillectomy procedure on the susceptibility of individual to develop with SARS COV-2 infection during the pandemic. In this study, 112 individuals included in this study. They were subjected to many questions include age, sex, history of tonsillectomy, history of COVID- 19 infection confirmed by PCR test. We excluded all patients with COVID-19 infection who did not have PCR test, patients with tonsillectomy after COVID-19 infection, all patients with immune deficiency status such as, diabetes mellitus (DM), AIDS, and those on immune suppressive therapy We found that the minimum age was seven and maximum age was eighty. Mean age was 33.62 years old. The number of males and females was equal in this study. From thirty persons who had history of tonsillectomy, ten had been infected with COVID-19. On the other hand, nearly half of individuals who did not undergo tonsillectomy were infected with COVID-19. In general, our study showed that the females were infected with COVID-19 more than males, with 29 infected females compared to 23 infected males.Although the number of subjects who did not have a history of tonsillectomy and had been infected with COVID-19 was higher than that of those who developed the infection and had undergone tonsillectomy, the difference is still not statistically significant.

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INTRODUCTION

The tonsils are lymphoid tissue support immune system by preventing foreign bodies and inhaled microbes from passing into the lower tract of respiratory system. Tonsils produce lymphocytes and immunoglobulins. Therefore, they are considered as first line defense in our body against pathogens (1).

Follicular germinal centers, extrafollicular area and reticular crypt epithelium are specialized lymphoid compartments in tonsils which are essential in maintaining activation of B-cells. The process of B-cell activation begins in T cell-dependent B-cells which are triggered by foreign antigens that enter the body. The triggered cells stimulate clonal B-cells expansion, as well as increasing affinity and somatic hypermutation in B-cell immunoglobulin and differentiation to B memory and plasma cells of different isotypes. This mechanism is important in fighting against bacteria and viruses (2).

Tonsillectomy is indicated if patients develop recurrent episodes of tonsilitis, particularly if it affects patients' performance and attendance whether in school or at work. However, recurrence of throat infection is still a risk after tonsillectomy (3).

The pandemic of coronavirus SARS-CoV-2 started in Wuhan China, in December 2019 and it is very contagious (4,5). it mainly affects the respiratory system, but it also can affect any organ or system in the body, such as, brain and nervous system, musculoskeletal and digestive system (6).

Disease severity range from asymptomatic disease to sever life threatening status, especially in patient with high risk factors (old age, immune compromised, etc. ...) (7).

MATERIALS AND METHODS

This is a prospective study conducted from June 2020 to December 2021 at the ENT clinic in Basrah City, Iraq. The total number of participants was one hundred twelve (112). Each individual was asked a series of questions, including age, sex, history of tonsillectomy, history of COVID-19 infection confirmed by PCR test, and whether they received treatment in outpatient departments or were admitted to the hospital. Patients who did not have a PCR confirmation test, had tonsillectomy after COVID-19 infection, or were immunocompromised (e.g., those with DM, AIDS, renal transplant, or undergoing chemotherapy) were excluded from the study. All data collected were analyzed by using IBM SPSS VERSION 23

RESULTS

The total number of subjects was 112, with a minimum age of 7 years and a maximum age of 80 years. The mean age was 33.62 years. Fifty percent (50%) were males (56 subjects), and the remaining 50% were females (fig.1). Table 1 shows the number of COVID-19 infected patients by sex. The infection rate was higher in females, with 29 cases compared to 23 in males.

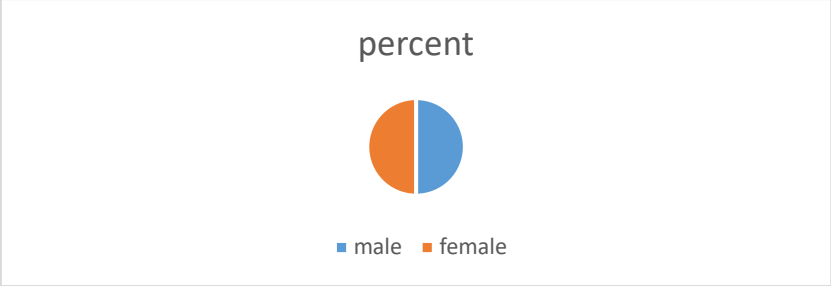

Fig. 1: Sex distribution

Table 1: Distribution of Males and Females Based on COVID-19 Infection Status

GROUP	INFECTED	NON-INFECTED	TOTAL
Male	23	33	56
Female	29	27	56
Total	52	60	112

A total of 30 subjects had a history of tonsillectomy, while 82 subjects did not. Among the 30 tonsillectomized subjects, 10 were infected with COVID-19. In contrast, 42 of the 82 subjects without a history of tonsillectomy were infected, as shown in Table 2.

Table 2: Distribution of COVID-19 Infection in Tonsillectomy vs. No Tonsillectomy Groups

		Group		Total
		Infected	Not infected	
Group	Tonsillectomized	10	20	30
	Nontonsillectomized	42	40	82
Total		52	60	112

DISCUSSION

Due to their function, the tonsils are considered part of the immune system and serve as one of the body's first lines of defense against pathogens. This is well understood by the general population, so any attempts to remove the tonsils for various reasons often raise concerns regarding the potential impact on immune function and the risk of recurrent infections.

This concern motivated us to explore the association between COVID-19 infection and a history of tonsillectomy, comparing patients with and without a history of the procedure. Our results indicate that one-third of subjects with a history of tonsillectomy reported having contracted COVID-19 during the pandemic, whereas approximately half of the subjects without a history of tonsillectomy were infected with SARS-CoV-2.

These findings align with previous studies, such as those by Ping-Hao Chiang et al. and Yanping Yang et al. (8, 9), which concluded that patients with a history of tonsillectomy are at a lower risk of COVID-19 infection and have fewer comorbidities and lower mortality rates compared to those without tonsillectomy. Additionally, an analysis of the UK Biobank data, which examined thousands of patients, showed that individuals who underwent tonsillectomy exhibit a lower risk of both mild and severe COVID-19 infections (9).

Another study suggests that pharyngeal lymphoid tissues, including both the palatine tonsils and adenoid, may serve as sites for prolonged infection even in the absence of COVID-19 symptoms (10).

On the other hand, a study by Hani Hameed Wadi et al. found that patients who underwent tonsillectomy experienced more systemic manifestations, such as fever and chills, compared to those without the surgery (11). These results are consistent with those reported by Vincenzo Capriotti et al., although no significant difference in hospital admission rates was observed between the two groups (12).

CONCLUSION

Subjects without a history of tonsillectomy were more likely to be infected with COVID-19 compared to those with a history of tonsillectomy. However, this difference was not statistically significant. A larger study that collects data from various regions of Iraq is needed to further investigate this association.

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